

# **Recovery Phase Decision-Making in the Event of a Chemical Warfare Agent Release**

Stephen L. Kistner<sup>1</sup>, Annetta Watson<sup>2</sup>, Veronique Hauschild<sup>1</sup>, Jennifer Lindado<sup>1</sup>, Gail Robinson<sup>1</sup>, Dennis Opresko<sup>2</sup>, Robert Ross<sup>2</sup>, and Robert Young<sup>2</sup>, Joseph King<sup>5</sup>

- 1 - U.S. Army Center for Health Promotion and Preventive Medicine  
Attn: MCHB-SA, Aberdeen Proving Ground, Maryland 21010-5422  
United States of America  
Voice: (410) 671-2307  
Fax: (410) 612-8513
- 2 - Life Sciences Division, Oak Ridge National Laboratory
- 3 - U.S. Army Environmental Center

## **ABSTRACT**

Elements of the U.S. military have been performing contingency planning related to the potential release of various chemical warfare agents for more than a decade. These efforts have been primarily directed at such activities as the chemical agent stockpile demilitarization sites, as well as for developing verification and compliance monitoring programs integral to the international Chemical Weapons Convention. However, with the discovery of buried World War I vintage chemical warfare materiel in 1992 at Spring Valley within the Washington, D.C. city limits, and even more spectacularly, the Tokyo subway incident in 1995, there has been a public outcry for increased technical information relative to acts of domestic terrorism. Of primary concern in planning for such future emergency response incidents is information on weapons of mass destruction, especially chemical warfare materials.

In the course of preparedness planning for disposal of the U.S. unitary stockpile of chemical warfare agents, communities have raised the issue of identifying specific means by which to address environmental concerns and the potential health consequences of these compounds following any chemical agent event. This paper particularly addresses those aspects of health significance following the emergency phase of a chemical warfare agent release. Such issues as - "When is it safe for the public to reenter a potentially contaminated area?" "What criteria should be utilized to assess the degree of environmental contamination?" And, "What protocols and guidance material exists to assist in planning for these contingencies, to aid in the reentry/restoration decision-making process, and to provide realistic health-based criteria for addressing concerns in a variety of environmental media?"

## Introduction

In late 1985, Congress mandated that the U.S. stockpile the lethal unitary chemical agents and munitions be destroyed by the Department of the Army in a manner that provides maximum protection to the environment, the general public and personnel involved in the disposal program (Public Law 9901, Section 1412, Title 14, Part b). These unitary munitions were last manufactures in the late 1960s. The stockpiled inventory is estimated to approximate 25,000-30,000 tons (Anft, 1988), and includes organophosphate (“nerve”) agents such as GA, GB, GD, VX [O-ethyl ester of S-(diisopropyl aminoethyl) methyl phosphonothioate,  $C_{11}H_{26}NO_2PS$ ] and vesicant (“blister”) agents such as HD [sulfur mustard; bis (2-chloroethyl sulfide),  $C_4H_8Cl_2S$ ]. The method of agent destruction selected by the Department of the Army is combined high-temperature and high-residence time incineration at secured military installations where munitions are currently stockpiled (eight facilities in the continental U.S. and one on Johnston Atoll in the South Pacific; Carnes 1989)